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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,394	05/25/2001	Nevenka Dimitrova	US 010265	5012

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EXAMINER	
ZHOU, TING	
ART UNIT	**PAPER NUMBER**
2173	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/866,394	DIMITROVA ET AL.	
	Examiner	Art Unit	
	Ting Zhou	2173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-15,17-24,26-33 and 35-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7-15, 17-24, 26-33 and 35-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 10 December 2004 have been received and entered. The applicant has cancelled claims 6, 16, 25 and 34. Claims 1-5, 7-15, 17-24, 26-33 and 35-38 as amended are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 7-15, 17-24, 26-33 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article entitled "Color SuperHistograms for Video Representation", written by Dimitrova et al., and Wang et al. U.S. Patent 5,805,733.

Referring to claims 1, 11, 21 and 30, Dimitrova et al. teach an apparatus, system, method and computer executable instructions comprising a visual summary controller capable of creating a visual summary of video material (Dimitrova et al.: page 316, Figure 1), wherein the visual summary controller is capable of extracting frame signatures (histograms) from keyframes of video material and capable of using the frame signatures to create superhistograms from the keyframes (Dimitrova et al.: page 314, right column, lines 11-25, page 315, section 2 and page 316, section 2.3; this is further shown in Figure 1). However, although Dimitrova et al. teach

using the frame signatures and superhistograms to create a visual summary of video material in a broad sense (representing video segments by computing superhistograms) (Dimitrova et al.: Abstract), Dimitrova et al. fail to explicitly teach selecting representative keyframe images for each superhistogram to create a compact visual summary of the video material, wherein the representative images include at least one of the first image in each family histogram, the most meaningful image in each superhistogram, a randomly chosen image and an image that is closest to the cluster center. Wang et al. teach the analysis of scenes and frames in video materials (Wang et al.: column 1, lines 53-56 and Figure 2) similar to that of Dimitrova et al. In addition, Wang et al. further teach selecting representative keyframe images from each group of related scenes to create a compact visual summary of the video material (summarizing a video sequence by taking one representative frame from each set of related scenes with similar average color histograms, to represent the set to enable the user to view a large sampling of video sequence images) (Wang et al.: column 1, lines 51-67 and column 2, lines 1-24; this is further shown in Figure 3), wherein the representative images include at least one of the first image in each family histogram, the most meaningful image in each superhistogram, a randomly chosen image and an image that is closest to the cluster center (the representative frame image can be taken from the temporally medial scene in the set or from one of the frames of the longest scene in the set of related scenes) (Wang et al.: column 3, lines 37-66). It would have been obvious to one of ordinary skill in the art, having the teachings of Dimitrova et al. and Wang et al. before him at the time the invention was made, to modify the visual summary controller capable of extracting frame signatures from keyframes to create superhistograms of Dimitrova et al., to include the further step of selecting representative keyframes from those superhistograms and using the

representative keyframe images to create a compact visual summary, taught by Wang et al. One would have been motivated to make such a combination in order to meet the need of being able to readily access and manipulate video information, by cataloguing and storing the potentially thousands of hours of video for rapid future retrieval, browsing and use, created by the increasing availability and use of digital video and the increasing integration of computer technologies and video production technologies.

Referring to claims 2, 12, 22 and 31, Dimitrova et al. teach the filtering of keyframes (merging of histograms into family histograms) and extracting frames signatures (computing color histograms) from the filtered keyframes before using the frame signatures (histograms) to create the superhistogram representing a visual summary of the video material (page 315, right column, section 2 and page 316, left column, section 2.3).

Referring to claims 3, 13, 23 and 32, Dimitrova et al. teach the use of superhistograms to cluster the filtered keyframes (the ordered merging of the family histograms to create the superhistogram), wherein the clustered keyframes (superhistogram) represents the visual summary of the video material, as recited on page 314, right column, lines 11-25 and shown in Figure 1.

Referring to claims 4 and 14, Dimitrova et al. teach the use of a histogram as the frame signature used to compute superhistograms (page 314, right column, lines 11-15).

Referring to claims 5, 15, 24 and 33, Dimitrova et al. the use of the L1 distance measure method, L2 distance measure method, histogram intersection method, Chi-Square test and Bin-wise histogram intersection method to computer the histogram difference (page 315, right column).

Referring to claims 7, 17, 26 and 35, Dimitrova et al. teach the ability to select the family histograms (the top *n* largest families) to use to create the superhistogram used to create the visual summary (page 316, section 2.4).

Referring to claims 8, 18, 27 and 36, while Dimitrova et al. teach all of the limitations as applied to claims 1, 11, 21 and 30 above, Dimitrova et al. fail to explicitly teach the capability to retrieve a visual summary stored in a memory unit and causing the visual summary to be displayed in response to a user request. Wang et al. teach the analysis of scenes and frames in video materials (Wang et al.: column 1, lines 53-56 and Figure 2) similar to that of Dimitrova et al. In addition, Wang et al. further teach the capability of letting a user select a visual summary for viewing, retrieving that visual summary from memory and displaying it in response to the user's request (displaying visual summaries of scenes in a movie bar and allowing users to access the summaries by selecting the segments corresponding to the scenes) (Wang et al.: column 2, lines 16-29 and shown in Figures 2 and 3). It would have been obvious to one of ordinary skill in the art, having the teachings of Dimitrova et al. and Wang et al. before him at the time the invention was made, to modify the visual summary controller capable of extracting frame signatures from keyframes to create superhistograms of Dimitrova et al., to include the retrieval and display of the visual summary in response to a user request, as taught by Wang et al. One would have been motivated to make such a combination to give users the flexibility to select which scenes to watch, saving them time from having to browse through all of the other irrelevant scenes; furthermore, because the increasing availability and use of digital video and the increasing integration of computer technologies and video production technologies have produced the need to be able to readily access and manipulate video information, it would have

been advantageous to make such a combination in order to provide users a way to summarize the content of video quickly and easily, in order to catalogue and store the potentially thousands of hours of video for rapid future retrieval, browsing and use.

Referring to claims 9, 19, 28 and 37, Dimitrova et al. teach the use of the visual summary obtained from the superhistograms to access at least a portion of the video material (classifying and searching in video archives), as recited on page 317, section 4.2.

Referring to claim 10, 20, 29 and 38, while Dimitrova et al. teach all of the limitations as applied to claims 1, 11, 21 and 30 above, Dimitrova et al. fail to explicitly teach the creation of new video material using the compact visual summaries. Wang et al. teach the analysis of scenes and frames in video materials (Wang et al.: column 1, lines 53-56 and Figure 2) similar to that of Dimitrova et al. In addition, Wang et al. further teach the creation of new video material using the compact visual summaries (a collage made up of representative frames for each set of summarized scenes) (Wang et al.: column 3, lines 53-57). It would have been obvious to one of ordinary skill in the art, having the teachings of Dimitrova et al. and Wang et al. before him at the time the invention was made, to modify the visual summary controller capable of extracting frame signatures from keyframes to create superhistograms of Dimitrova et al., to include the creation of new video material, as taught by Wang et al. It would have been advantageous for one to utilize such a combination in order to conserve processor time and storage space by utilizing the already existing visual summaries in the creation of new visual materials; furthermore, because the increasing availability and use of digital video and the increasing integration of computer technologies and video production technologies have produced the need to be able to readily access and manipulate video information, it would have been advantageous

to make such a combination in order to provide users a way to summarize the content of video quickly and easily, in order to catalogue and store the potentially thousands of hours of video for rapid future retrieval, browsing and use.

Response to Arguments

3. Applicant's arguments filed 10 December 2004 have been fully considered but they are not persuasive.

4. The applicant asserts that Wang et al. do not teach or disclose the limitations of claims 6, 16, 25 and 34, which have been incorporated into independent claims 1, 11 21 and 30, respectively. Specifically, the applicant asserts that Wang et al. do not teach or disclose that "said representative images include at least one of (1) the first image in each family histogram, (2) the most meaningful image in each superhistogram, (3) a randomly chosen image, and (4) an image that is closes to the cluster center". The examiner respectfully disagrees. Wang et al. teach selecting a representative frame image for each set of summarized related scenes, as recited in column 3, lines 37-57. Furthermore, Wang et al. teach that the representative frame can be taken from the temporally medial scene in the set, i.e. the representative frame can be a frame that is halfway between the first and last scenes, as recited in column 2, lines 12-15 and column 3, lines 57-59; in other words, the representative frame can include a frame that is in the middle, or center, of the cluster of scenes. In addition, Wang et al. also teach that the representative frame can be a frame taken from the longest scene, since the longest scene is most indicative of the content of the related scenes, as recited in column 3, lines 59-62; in other words, the

representative frame can include a frame that is the most indicative of the contents of the related scenes, i.e. the most meaningful frame in the group. Therefore, it can be seen that Wang et al. teach that the representative images includes **at least one of** the first image in each family histogram**, the most meaningful image in each superhistogram**, a randomly chosen image and **an image that is closest to the cluster center**.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ting Zhou whose telephone number is (571) 272-4058. The examiner can normally be reached on Monday - Friday 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached at (571) 272-4048. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-4058.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

19 January 2005

JOHN CABECA
SUPERVISORY PATENT EXAMINER
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